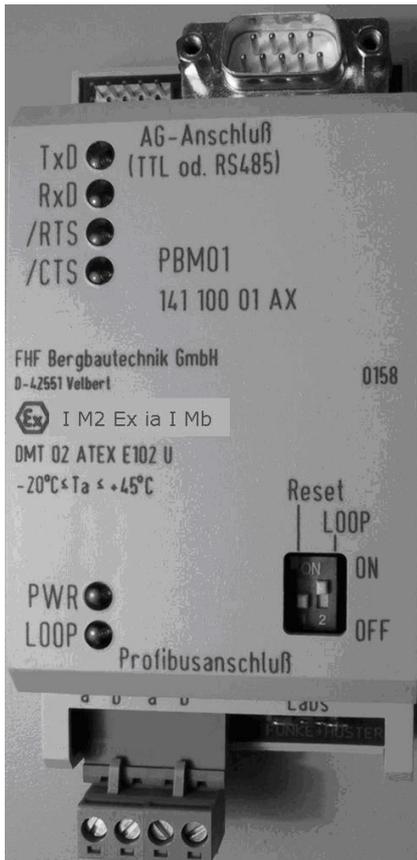


Profibus modem PBM01

Ordering data

Designation	Type	Item no.
Profibus modem	PBM01	141 100 01 AX



- Profibus data transmission device
- Profibus input circuit galvanically isolated (transformer decoupled connection)
- Transmission rate: 93.75 kbit/s
- Phase coherent FSK modulation
- TTL and RS485 signal inputs and outputs for connection to an automation device
- Internal LOOP switch to activate the listening function for own transmitted data
- Optical LED status display for signals TxD, RxD, /RTS, /CTS, LOOP and power supply (PWR)
- Internal reset switch
- Connection to bus terminating resistor possible
- Connection to max. 32 PBM01 units to one bus line is possible
- Type of protection I M2 Ex ia I Mb

Application

The Profibus modem PBM01 is a vendor-neutral Profibus data transmission device in intrinsically safe design. This modem provides access to the bus for those manufacturers of automation devices for use in mining which are equipped with a Profibus interface according to BB22444 T6.

The PBM01 is connected with the Profibus bus line by means of the Profibus connection. The respective automation device (AG) is connected to the AG connection. The 5V_{DC} operating voltage is supplied by the automation device.

Configuration

The electronics of the Profibus modem PBM01 is installed in a module hous-

ing for 35mm top-hat rail mounting. This type of construction ensures the universal application of the Profibus modem.

On the bus side, the Profibus modem is equipped with 4 plug-in screw terminals. The terminals are used to connect the incoming and outgoing 2-wire bus line with the Profibus modem. The polarity of the line does not need to be observed.

Upon closing switch L_{abs} a bus line terminating resistor inside the modem is activated which terminates the bus line with the wave impedance connected to this Profibus modem. This resistor may only be activated at the respective end of a bus line which means that only the resistor in the last modem

Profibus modem PBM01

connected to a bus line should be Note:

Insofar as possible, the bus shall be given a line configuration, spur lines of more than 5m length are not permissible due to a possible interference ($\lambda/4$ transformations of the open-circuit line end).

On the side of the automation device of the PBM01 modem (AG connection) two plug connectors are available. One 9-pin D-sub ("male") plug connector for connection to an RS485 interface and a two row pin connector for the connection to a TTL interface. The voltage is supplied by the automation device through the particular interface used.

The Profibus modem PBM01 is equipped with three switches for the functions "L_{abs}", "LOOP" and "Reset".

Mode of operation

The Profibus modem is connected between the Profibus line and the automation device. The bus line is galvanically isolated from the electronics of the Profibus modem by means of a transformer. In case of reception, the transformer features such a high im-

activated.

pedance that 32 bus devices can be operated at one bus line. Resistors are installed to adapt the transmitter internal impedances to the impedance of the transmission line. Zener diodes protect the transmission circuit against voltage peaks.

On the transmission side, a corresponding resistor is installed to limit the current. The energetic decoupling between the station and the bus side is obtained by resistors in the control lines of the transmission transistors and in both reception lines.

If the Profibus modem detects reception signals featuring a level in the permissible range, the reception logic will be activated and the modulator / demodulator stage switched on. Subsequently, a pre-amplifier boosts the reception signals to the internal TTL level of the modem, before the downstream modulator / demodulator converts them back into the original signals. For this purpose, the FSK reception signal at TTL level is linked with the EXOR signal which is delayed by half a bit time. The (NRZ) reception signal derived from this process corre-

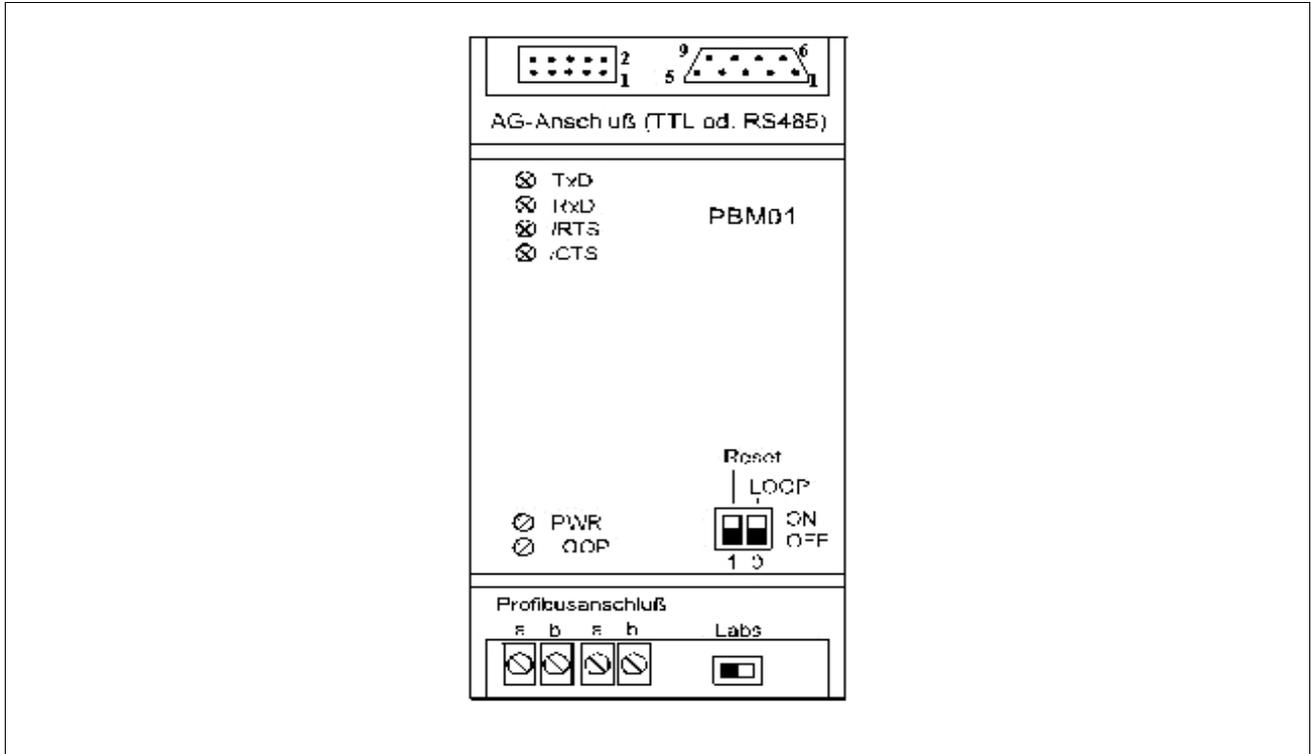
sponds to the original signal and is available to the automation device as "RXD" signal.

On the transmission side, the component features the two reception signals "/RTS" and "TxD" (TTL interface). If "/RTS" is activated (Low), "/CTS" will respond with Low (/RTS, /CTS bridged). The transmission is triggered by a Low to TxD or an active signal at the RS485 interface. The PBM01 puts a preamble of 4 bits (4 times High at 93.75 kHz) in front of the data stream. As a result, the data will be output on the FSK side with a delay of 4 bits. The reception section of the Profibus modem carries out the temporary buffering of the "TxD" signal and the synchronization with the carrier wave at 93.75 kHz and 187.5 kHz (High=93.75 kHz, Low=187.5 kHz).

The switchover of the carrier signals always occurs at the zero passage (phase coherence).

The interface signals from and to the automation device are operated with TTL and/or RS485 signals.

Overview of front side



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